B/L: 505.20 \$YS: ONE TON

BRIDGE CRANE

Critical Item: Worm Orive Gear Reducer (4 Items Total)

JAN 2 3 1995

Find Number: 2 Criticality Category: 2

SAA No: 09FY36-001 System/Area: Ordnance Storage Facility

NASA PMN/ K61-2660

Part No: None Name: One Ton Bridge Crano

Mfg/ Electrolift Inc. Drawing/ 72-K-L-13040, 72-K-L-13039

Part No: 1423 Sheet Nn: 4, 5

Function: Provides lifting, lowering, and holding capability for flight hardware.

Critical Failure Mode/Failure Mode No: Gears Disengage / 09FY36-001.001

Worm Wheel Key Shears / 09FY36-001.002

Failure Cause: Structural Failura

Failure Effect: Torque for holding the wire rope drum will be lost. Suspended lose will drop resulting in possible loss (damage) of a vehicle system. Detection Method: Visual. Time to Effect: Immediate.

# **ACCEPTANCE RATIONALE**

#### Design:

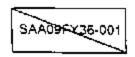
- Hoist design is based on ANSI B30.16, Overhead Hoists (Underhung).
- The hoist gearbox is an off the shelf item manufactured by Electrolift Inc.
- A safety factor of at least 5.0:1 (ultimate) has been maintained throughout the worm drive gear reducer assembly load carrying components.
- The gear reducer is designed to retain gears in place by shoulders within the conlines of the gearcase. Thus, a gear failure would tend to lock up within the gearcase and prevent the load from lowering.
- The worm material is composed of AISI 8620 Hardened and Ground Steel and the worm whee: material is Bronze UNS C92600.
- · The key material is AISI 1018 cold rolled carbon steel.

#### Test:

A load test at 100% of the rated load (2,000 lb.) is performed annually.

WORKSHEET 5312-013 931020ehPS0197

EC1-SAA09FY36-L... 2 of 2



Worm Drive Gear Reducer (continued)

JAN 2 3 1995

- All four hoists were proofloaded at 2,500 lbs. on 11-18-93.
- Preoperational set up verifies proper operation of the Gear Reducer.
- OMRSD File VI requires annual performance of a rated load test to verify system integrity.

## inspection:

 OMI Q6103 requires monthly inspection of the hoist for grease leakage, loose botts, corrosion or other signs of deterioration.

## Failure History:

- The PRACA database was researched and no failure data was found on this component in the critical failure mode.
- The GIDEP failure data interchange system was researched and no failure data was found on this component in the critical failure mode.

# Operational Use:

Correcting Action:

There is no action which can be taken to mitigate the failure effect.

Timeframe:

Since no correcting action is available, timeframe does not apply.